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ABSTRACT

Research has found the Social Judgment Analysis (SJA) approach, with its focus on judgment policy and cognitive feedback, to be a significant factor in developing group member agreement and improving member performance. A controlled experiment was designed to assess the relative quality of the judgment making process provided by SJA. Undergraduates (N=144) were clustered into 32 groups on the basis of systematic differences in their judgment policies to assure heterogeneous groups with members in initial disagreement. Twelve of the groups used SJA to form a group policy to predict horse race outcomes; the remaining 20 groups, as well as 38 individuals, were assigned to four control conditions with variations in task-related instructions and cognitive feedback. Quality of group decisions, reduction of group disagreement, and participant rating of group process were assessed. Results indicated that the SJA approach with task-related instructions and cognitive feedback concerning individual judgment policies mutually shared by the entire decision-making group not only produced extremely high levels of group consensus, but also permitted individual members to learn and improve their own performance. The findings suggest that alterations in the content of interpersonal communication such as those provided by the SJA approach make a significant difference in group effectiveness. (NRB)

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SOCIAL JUDGMENT ANALYSIS:
METHODOLOGY FOR IMPROVING INTERPERSONAL COMMUNICATION AND UNDERSTANDING

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Social Judgment Analysis:
Methodology for Improving Interpersonal Communication and Understanding*

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Over a decade ago, Van de Ven and Delbecq (1971) accurately predicted that the vast accumulation and fractionalization of information bases would increasingly require group processes for creative solutions to complex social and organizational problems. In their brief review of the small group literature, they identified 8 "inhibiting influences which act to reduce the performance of interacting groups" and proposed a method, subsequently known as the Nominal Group Technique (NGT), intended to enhance the effectiveness of group processes. Hackman and Morris (1975) strongly endorsed such efforts toward the possible alteration of traditional interaction in small groups:

We suggest that the key to understanding the "group effectiveness problem" is to be found in the on-going interaction process which takes place among group members while they are working on a task....The challenge is to identify, measure, and change those aspects of group interaction process that contribute to such obvious differences in group effectiveness.
(p. 46)

In addition to NGT (see Delbecq, Van de Ven, & Gustafson, 1975), several other methods also have been suggested as alternative structures for redirecting the group interaction process (for example, see Linstone & Turoff, 1975; Carnes, 1980).

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When one seriously considers the nature of most decision-making situations faced by small groups, however, it becomes clear that the content of the interaction, at least as much as the method of the interaction, is critical to group effectiveness. Altering the method of interaction alone may help to organize and control the flow of information between individuals, but it does little to ease the responsibility of the decision makers who must make complex judgments that demand the integration of conflicting information from diverse sources or the assessment of critical tradeoffs between competing objectives. Furthermore, such new methods do little to convey among decision makers the fundamental explanations for their apparent disagreements in a manner that facilitates interpersonal understanding and, thus, full group commitment to the final compromises that may be made in order to reach a consensual decision.

A considerable body of psychological research (for a review, see Hammond, McClelland, & Mumpower, 1980) has led to the conclusion that, when group members exercise their judgment, they engage in at least the following cognitive activity: they a) marshal whatever pieces of information they can, b) attach differential importance to the various pieces, and c) somehow organize this differentially weighted information into judgments regarding what ought to be done, what can be done, or what will be done. But, as Hammond, Cook, & Adelman (1977) aptly point out, all of this activity

...is hidden from direct observation. No one can be sure what information is marshalled, exactly how much weight is attached to which piece of information, or the precise manner in which the weighted information is organized into a judgment. Only the persons exercising their judgment can report on that process. As a result, much of the verbal interchange between persons is occupied with self-reports, and queries about self-reports, on the unseen judgment process. (p. 80)

To rest even the most improved method of group interaction on the traditional content of group interaction, that is, the self-report, would appear to be

a most critical mistake. According to Hammond et al. (1977), there is sufficient empirical evidence to suggest that the typical, uninstructed self-reports about one's judgment process

...are of dubious value; they are in most instances a poor and misleading means of communication and are thus likely to defeat interpersonal learning and increase conflict rather than reduce it....Self-reports are subject to the inaccuracy of introspection. That is, despite the best of intentions, any introspection regarding the basis for a judgment may simply be an incorrect description of the cognitive activity that took place.... Multiple meanings of words and the idiosyncratic use of words illustrate that verbal language is inexact and used inexactly by communicators....The meanings of words and sentences are stored in human memory which is a highly fallible process. Human memory, unfortunately, involves a transformation process neither fully understood, under control, nor available for recovery. (pp. 80-81)

Hammond and Brehmer (1973) have suggested that empirically derived information about differences in individuals' judgment policies (i.e., "cognitive feedback" including properties of the decision makers' cognitive activity) should reduce their disagreements and improve the quality of their judgment. Thus, instead of individuals' trying to deal blindly with differences in the overt expression of their judgment with some self-reported explanation, they are permitted to explore in depth and graphic detail the differences in the logic of their underlying, covert judgment policies. Early laboratory research supported the suggested utility of cognitive feedback in improving the accuracy of individual judgment and reducing disagreement within dyads (see Hammond, Stewart, Brehmer, & Steinmann, 1975). A series of field application of this approach, subsequently known as Social Judgment Analysis (SJA), followed in such areas as conducting labor-management negotiations, purchasing municipal land, water resources planning, selecting police handgun ammunition, and establishing institutional objectives (see Hammond, Rohrbaugh, Mumpower, & Adelman, 1977; Rohrbaugh, 1982).

Rohrbaugh (1979, 1981) has reported testing several methods of small group interaction when the content of the interaction was enhanced to promote the discussion of cognitive feedback, that is, when communication was primarily centered on the problem of how best to use information (a focus on judgment policy) rather than on the more customary problem of merely making choices among alternatives (a focus on the objects of evaluation alone). Although no differences in the accuracy of the final group product were discovered, both NGT and the Delphi technique were found to be significantly less helpful in reducing intragroup conflict and building consensus than groups upon which no method of structuring the interaction process was imposed. Individual learning from the group situation was also found to be significantly impaired by both NGT and the Delphi technique. The SJA approach, without any imposed structure other than that provided by its unique definition of the task itself (a focus on judgment policy rather than on objects of evaluation) and the provision of cognitive feedback in the form of graphic representations of the judgment process, appears to be significantly better at developing member agreement and improving member performance.

From what does the benefit of the SJA approach derive in its application to small group decision making? Does the availability of cognitive feedback to each group member provide better self-insight and therefore lead to the observed improvement in individual learning? Is there something crucial about the use of cognitive feedback in fostering the communication of ideas between group members that leads to the observed improvement in participant agreement? To answer such questions, a controlled experiment was designed to provide a number of conditions against which the typical application of the SJA approach could be compared.

OVERVIEW OF THE STUDY

The present study was designed to empirically assess the relative quality of the judgment-making process provided by Social Judgment Analysis in a controlled experimental setting. In brief, four types of control groups were used as comparison baselines:

- 1) interacting groups with task-related instructions but only individual (not shared with others) cognitive feedback;
- 2) interacting groups with task-related instructions but no cognitive feedback;
- 3) individuals with task-related instructions but no cognitive feedback; and
- 4) individuals with neither task-related instructions nor cognitive feedback.

Because output quality, collective consensus, and individual satisfaction have been traditional indices of group performance (see Shaw, 1976), SJA was assessed on a) the degree of accuracy of the final group policies, b) the amount of reduction in disagreement among the group members, and c) the level of subjective ratings by the group members concerning the quality of their respective interaction process.

Undergraduates were enrolled in the study as participants. Their task was one with considerable intentional depth (see Brunswik, 1934, 1955; Rohrbaugh, 1979): to predict the outcomes of selected horse races based upon available information in the racing forms. The study was conducted in two stages. In the initial stage, participants were asked to judge the finishing positions (from first to sixth place) of horses that were described to them with regard to their post position, jockey's win record; median speed rating, yearly winnings, and

handicap points. These data, as well as self-reported experience with horse racing, were obtained so that it would be possible to cluster the participants on the basis of systematic differences in their judgment policies and handicapping skills, thereby providing a statistical method for creating heterogeneous groups with members in initial disagreement. Thirty-two groups were subsequently created. In the second stage of the study, approximately one-third of the groups were systematically selected to use SJA to formulate a group policy or system that would best predict race outcomes; the remaining 20 groups (as well as 38 individuals) were assigned to control conditions.

METHOD

The Sample

Initially, 275 undergraduate students enrolled in management courses at the State University of New York at Albany participated in the first stage of the study during regularly scheduled class meetings. The participants then were scheduled for the second stage of the study, i.e., the small group and individual sessions, that were arranged at their convenience. A total of 32 separate group sessions were conducted that were attended by over 50% of the original set of participants ($N = 144$). Approximately 15% more of the original set ($N = 38$) attended the individual sessions. Attrition was primarily due to the difficulty of scheduling sessions mutually convenient for all group members.

The Task

The task required participants to make judgments about the outcomes of selected horse races (the finishing position of the fastest 6 horses) based upon five pieces of information for each horse retrieved from racing forms: a) post position (i.e., its distance from the track's center rail at the start of the

race); b) jockey's win record (i.e., the proportion of races in the current year that its jockey was entered and won); c) median speed rating (i.e., its average percentage of the track record for the same distance calculated from its performances in previous races); d) yearly winnings (i.e., the total amount of money it had won thus far in the calendar year), and e) handicap points (i.e., the number of handicappers recorded in the racing form as predicting it would finish third or better--a maximum of 6). All races included in the present study were run by experienced (non-maiden) horses over 6 furlongs under best track conditions during the 1978 spring meeting at Aqueduct.

The task was presented to participants as a judgment problem in predicting finishing positions in the role of a handicapper. According to the instructions provided:

In this situation, handicappers attempt to best predict which horses are most likely to win the race; they are not trying to place bets or "beat the odds." When you play the role of a handicapper, use the available information to predict to the best of your ability what the actual finishing position of the horses will be. If you think a horse is really a "long shot," do not move it up in your rankings just because it would be a "smart bet." In other words, you are to separate the winners from losers, not attempt to win the most money.

Because of the presence of Off-Track Betting (OTB) in New York State and the Saratoga Race Track near Albany, the task held considerable interest for most of the participants; over two-thirds of the students, for example, reported having placed a bet about the outcome of at least one horse race prior to participating in the present study.

The five variables selected for use are readily available in most racing forms. They were chosen as predictors both because they were relatively uncorrelated (r s ranged from $-.06$ to $.25$), they jointly accounted for a somewhat large proportion of the variance in finishing positions, and their relationship

to the criterion (in terms of their weights and function forms) differed and were not immediately obvious. In short, the intentional depth of the task provided a reasonable basis for disagreement among participants. The multiple R for the predictors (including linear and quadratic terms) was .46, indicating that the regression equation accounted for slightly more than 20% of the variance in the outcomes of the 34 races ($N = 202$)¹ selected for study. By converting the equation into relative weights (which sum to 100) and function forms (see Hammond, Stewart, Brehmer, & Steinmann, 1975), the task can be graphically depicted as in Figure 1. A cross-validation was conducted to check on the amount of shrinkage in the multiple correlation of the task that might be expected when the same regression equation was applied to another sample of similar races in a subsequent year (Kerlinger & Pedhazur, 1973). The resulting r_{yy} , between the 1978 screening sample and a 1980 calibration sample (14 races; $N = 96$) was .48, even higher than the initial multiple R and an excellent indication that the regression coefficients were relatively stable. An equal weighting of the predictors resulted in a multiple R of .28, indicating that the variables had to be differentially weighted in order to maximize performance.

In the first stage of the experiment, participants were asked to make initial individual judgments about the finishing positions of 7 separate races run at Aqueduct. The horses in each race, having been systematically selected from the larger sample of 34 races, were represented by a profile of information derived from the appropriate racing forms. Several sheets containing this condensed information were distributed to the participants with a full description of each variable and the role of the handicapper. Participants were asked to predict the finishing position (from first to sixth) of each horse, relying as best they

¹Two of the 34 races included only 5 horses.

could upon previous experiences with horse racing or, at the least, uninformed "good judgment." Thus, with 6 judgments for each race, a total of 42 judgments were made.

Preparation for Small Group Sessions

Two analyses of the participants' judgments were made prior to the series of small group sessions. The first analysis was necessary in order to provide participants in several experimental conditions with graphic displays of their own judgment policies. This analysis was based on a procedure for pictorially representing the judgment policy of each of the participants. The method is identical to that used to develop the task model except, in this instance, the judgment set of each participant became the criterion variable predicted by the linear and quadratic terms. The regression equation for each participant's judgment set was subsequently converted into relative weights and function forms for graphic display. The average multiple R for the participants' policies was .89; over 90% of the policies produced multiple R s greater than .78, indicating the potential of the regression models to represent well the participants' judgment policies.

The second set of analyses was necessary in order to provide a method for selecting members of each experimental group that would maximize intragroup disagreement and heterogeneity. This analysis involved initially clustering the participants into homogeneous groups on the basis of similarities in the handicapping judgments. The clustering algorithm used was the maximum method or complete linkage approach described by Johnson (1967). The result of the cluster analysis was the identification of 10 major clusters including 85% of the participants. Individual participants appearing in the same cluster were systematically dispersed in their assignment to experimental groups, such that over 65%

of the participants in each experimental group were from unique clusters. A subsequent check of similarity or agreement between participants assigned to various conditions indicated no significant difference in composition (to be discussed in more detail below). Other checks were made to confirm that no differences between conditions occurred in the self-reported experience with horse racing (e.g., "How much initial interest do you have in horse racing?" "How many times have you actually watched a horse race?" "Have you ever bet on a horse race?" "How good a handicapper do you think you were for these races?") or in the size of the groups which ranged from 3 to 6 members.

Description of Group Processes

Participants in every group were told that basic differences in the predictive use of the horse racing data existed among them and that they would need to reduce these differences in order to establish a handicapping policy for their group. All group participants were also given instruction in the means of specifying handicapping policies by assigning relative weights and function forms to each predictor variable. When all group members had demonstrated that they understood the use of relative weights and function forms in specifying handicapping policies, the subsequent directions given to the various experimental conditions diverged.

Participants in groups using the SJA approach were shown pictorial representations of their own judgment policies, as well as a large chart that tabled the weights and function forms of all the the group members. Participants were encouraged to compare and contrast their policies with those policies of the other members, noting where differences in the relative weights and function forms existed across policies. This process provided the cognitive feedback about the group members' judgment policies which is critical to the function of SJA. No

other structure was imposed on these groups, and they were permitted to interact in any manner they wished until they could agree upon a final handicapping policy that would best predict the finishing positions of the horse races. The final policy for each group was specified in terms of relative weights and function forms for each of the five predictors.

Participants in the control groups with only individual cognitive feedback were shown pictorial representations of their own judgment policies but not specifically encouraged to exchange the display sheets or to look at those of the other members. Thus, group members in this condition gained insight into their own subjective judgment policies but not necessarily those of their fellow participants. Participants in the control groups without cognitive feedback were given no indication that they were missing such information; they were only encouraged to make use of the preceding task-related instructions to arrive at a consensual group policy comprised of weights and function forms for the five predictors.

Following the group process, participants in all three sets of groups were asked to specify the handicapping policy that they personally believed would best predict the finishing positions of the horse races, regardless of their group's final decision. Participants were also asked to evaluate the quality of their group's final decision ("How acceptable is the policy to you in its accuracy of prediction?") and the quality of their group's decision-making process ("How satisfactory?" "How difficult?" "How enjoyable?") on 11-point linear rating scales.

Description of the Individual Sessions

Two types of individual sessions were conducted to provide further control conditions with which to compare the SJA approach. Participants in the first

set of individual sessions were given task-related instructions to enable them to construct their own handicapping policy comprised of weights and function forms for the five predictors. After they had specified such a judgment policy, they were asked to reevaluate the most likely finishing positions of the horses in the 7 races they had handicapped in the first stage of the study. Participants in the second set of individual sessions were not given any task-related instructions at all but only asked to once again handicap the original 7 races, thus providing a test-retest condition.

RESULTS

Quality of Group Decisions

The degree of correlation between the predictions provided by a judgment policy model and the actual finishing positions across the 202 cases in the sample was used as an indication of the policy's quality. Of course, no policy could provide predictions that would correlate more than .46 with the actual finishing positions, since that was the size of the multiple R for the best fitting model of the task itself. In assessing each group with regard to the average correlation between individuals' policies and actual finishing positions prior to their respective processes, no significant difference in initial accuracy between experimental conditions was found.² In the SJA groups, r_s ranged from .10 to .40 with an average of .26; in the control groups, r_s ranged from .06 to .41 with an average of .24.³

²In fact, not one significant difference was found between groups assigned to the two control conditions. For this reason, all of the control groups were consolidated so as to form one aggregate baseline of comparison to increase the power of the statistical tests described in the following sections.

³All analyses involving correlations were performed after the r_s were first converted to Fisher z coefficients.

The quality of the group policies produced by SJA and the control groups were not significantly different ($t = 1.06$); the average r between the predictions provided by the policy models and actual finishing positions was .25 in the control groups and .28 in groups using Social Judgment Analysis. It is important to note that although this parallel level of accuracy in group policy formation was significantly better than the average initial accuracy of the individual participants, it was not significantly different on the average from that of the second most proficient members' initial policies. The initial policy of the most proficient member of each group was considerably more accurate: the average r was .33.

Unlike participants in the control groups, however, individuals in SJA groups were able to profit from the cognitive feedback during the interaction process and to improve the quality of their individual policies; the average r increased from .26 (the correlation between the predictions provided by individuals' initial policies and finishing positions) to .29 (the correlation between the predictions provided by individuals' final policies and finishing positions). In the control groups, such improvement in individual accuracy did not occur; in fact, the average r actually decreased from .24 to .23. Thus, the final individual policies of participants using Social Judgment Analysis were significantly more accurate than the final individual policies of participants in the control groups ($t = 2.73$). In the two control conditions involving participants working separately, absolutely no change in individual accuracy was observed between the first and second stages of the experiment. The differences in policy quality discussed above are presented graphically in Figure 2.

Reduction of Group Disagreement

Even though group decisions may be shown objectively to be high in quality, they may still be totally unsatisfactory to a minority (or even to a majority) of the participants themselves. Only marginal attention has been paid in the past to the evaluation of judgment methods with regard to the reduction of disagreement among individuals or the extent of member satisfaction with a compromise decision. Three measures were used in the present study to compare the reduction of members' disagreement between the two sets of groups: a) the increase in agreement among individual policy predictions following the group process; b) the agreement between final individual policy predictions and the final group policy predictions; and c) the subjective quality rating of the group policy by each group member.

Agreement among individual policies. No significant difference between sets of groups existed in the amount of initial agreement among their members: the predictions provided by the initial policies of the participants in each of the control groups were correlated on the average .74, in each of the SJA groups .74, as well. Thus, about 55% of the variance in predictions was being shared among the group members. Following the group process participants were asked to indicate the handicapping policy that they personally believed would best predict finishing position, regardless of their group's final decision. Participants in SJA groups were in significantly more personal agreement at the end of the sessions than the participants in the control groups: the predictions provided by the final policies of the participants in each of the control groups were correlated on the average .93, in each of the SJA groups .98 ($t = 2.64$), although both groups clearly made major shifts in the reduction of disagreement. In the sessions for individuals in which participants were asked to specify a final handicapping policy, an arbitrary partitioning of the participants into "nominal"

or "statistized" groups for the purpose of post hoc comparison revealed that these noninteracting groups would have been in considerably less agreement; the average rs for the four groups thus constructed were .71, .04, .87, and .63.

Agreement between individual and group policies. The second measure of reduction in group disagreement involved the correspondance between final individual policies and the final group policy. To the extent that participants advocated a policy from which predictions correlated highly with the predictions of the group policy, disagreement among group members was considered to have been reduced since individual group members implicitly would be indicating their support for the policy of the group as a whole. Participants in SJA groups individually advocated final handicapping policies that were significantly more similar to their group policies than the final individual policies advocated by members of the control groups. The average r between individual and group policy predictions in the set of SJA groups was virtually 1.00, in the control groups .97 (t = 2.58).

Subjective rating of quality. Although covert support for the final group policy (as measured by the discrepancy between its predictions and the predictions from individual final policies) was significantly lower in the control groups, no significant difference was found between the two sets of groups in the participants' expression of overt support, i.e., in their response to the question "How acceptable is the policy to you in its accuracy of prediction?" On the 11-point linear rating scale ranging from 0 to 10, participants in the control groups on the average rated their group policies 7.6, quite similar to the 7.3 rating for policies derived from Social Judgment Analysis (t = .89).

Ratings of Group Process

Participants in both sets of groups also were asked to evaluate their particular procedure on three 11-point linear rating scales ranging from 0 to 10. The specific questions were: a) "How satisfactory was this method for managing conflict in your group?;" b) "How difficult was this method for managing conflict in your group?;" and c) "How enjoyable was this method for managing conflict in your group?" None of the three questions produced significant differences in the assessments of the two sets of groups; overall satisfaction with SJA produced an average rating of 7.9 (7.6 for controls), difficulty of SJA process produced an average rating of 3.2 (3.2 also for controls), and enjoyment of SJA process produced an average rating of 6.9 (6.6 for controls).

DISCUSSION AND CONCLUSION

The present study provided evidence to suggest that the Social Judgment Analysis approach with task-related instructions and cognitive feedback concerning individual judgment policies mutually shared by the entire decision making group not only produces extremely high levels of group consensus but also permits individual members to learn and thus improve their own performance. In contrast, members of decision making groups in which cognitive feedback was not specifically shared by the entire group learned no more effectively than those in groups in which cognitive feedback was not available at all. Individuals working independently clearly did not improve their performance on the judgment task at all.

Why did the SJA groups appear to perform so effectively in comparison to the groups comprising the control conditions? A possible explanation is the reduced dependence of SJA groups on self-reports as part of the typical verbal interchange. Having available graphic representations of a variety of judgment policies, the participants appeared to take full advantage of comparing and contrast-

ing the various individual approaches for using information that were depicted. The relative weights and function forms displayed to the SJA groups were concise and interpretable self-reports in themselves, thus allowing the members to focus more efficiently on resolving the apparent differences through the exchange of logical explanations and rationales. The process appeared to facilitate interpersonal understanding and consequently interpersonal learning. Opinions were changed and almost complete interpersonal agreement achieved. Rohrbaugh (1982) has documented parallel results in a non-experimental setting in which participating managers made decisions with profound implications for their own organizations.

It is important to note that, without any imposed method for structuring the groups (SJA and control groups alike) other than that provided by the unique definition of the task itself (a focus on judgment policy rather than on objects to be evaluated), the groups studied in this research effort did not appear to suffer in the quality of their performance. They seemed to work at a level significantly better than the average member and about the level of the second most proficient member, as might be expected on the basis of previous research findings with NGT and Delphi groups (see Rohrbaugh, 1979, 1981). Yet even the control groups in the present study produced greater improvements in interpersonal agreement than have been found with NGT and Delphi-like conditions. The unique definition of the task in the groups presently under study that emphasized the need to attend to how information should be used and that provided an appropriate vocabulary for self-reports (in terms of relative weights and function forms) appeared to be sufficient to focus, direct, and sustain the effectiveness of the group interaction.

Does improving the content of group interaction reduce the need to alter the method of group interaction? The answer is still not an obvious one, but the

present study clearly suggests that alterations in the content of interpersonal communication such as those provided by the SJA approach makes a significant difference in group effectiveness. The effort to limit interpersonal communication (such as the method of NGT) or even to eliminate interpersonal communication (such as the Delphi method) may prove unnecessary, even counterproductive, if decision making groups can simply supplement their vocabulary, change the focus of their discussion, and improve their self-reports.

REFERENCES

- Brunswik, E. Perception and the world of objects: The foundations of a psychology in terms of objects (L.W. Brandt, trans.). Leipzig: Deuticke, 1934.
- Brunswik, E. Representative design and probabilistic theory in a functional psychology. Psychological Review, 1955, 62, 193-217.
- Carnes, W.T. Effective meetings for busy people. New York: McGraw-Hill, 1980.
- Delbecq, A.L., Van de Ven, A.H., Gustafson, D.H. Group techniques for program planning. Glenview, Ill.: Scott, Foresman, 1975.
- Goldberg, L.R. Man versus model of man: A rationale, plus some evidence for a method of improving on clinical inferences. Psychological Bulletin, 1970, 73, 422-432.
- Hackman, J.R., & Morris, C.G. Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 8). New York: Academic Press, 1975.
- Hammond, K.R., & Brehmer, B. Quasi-rationality and distrust: Implications for international conflict. In L. Rappoport & D.A. Summers (Eds.), Human judgment and social interaction. New York: Holt, Rinehart, & Winston, 1973.
- Hammond, K.R., Cook, R.L., & Adelman, L. POLICY: An aid for decision making and international communication. The Columbia Journal of World Business, 1977, 12, 79-93.
- Hammond, K.R., McClelland, G.H., & Mumpower, J. Human judgment and decision making: Theories, methods and procedures. New York: Praeger, 1980.
- Hammond, K.R., Rohrbaugh, J., Mumpower, J., & Adelman, L. Social judgment theory: Applications in policy formation. In M.F. Kaplan & S. Schwartz (Eds.), Human judgment and decision processes in applied settings. New York: Academic Press, 1977.
- Hammond, K.R., Stewart, T.R., Brehmer, B., & Steinmann, D. Social judgment theory. In M. Kaplan & S. Schwartz (Eds.), Human judgment and decision processes: Formal and mathematical approaches. New York: Academic Press, 1975.

- Johnson, S.C. Hierarchical clustering schemes. Psychometrika, 1967, 32, 241-254.
- Kerlinger, F.N., & Pedhazur, E.J. Multiple regression in behavioral research. New York: Holt, Rinehart, & Winston, 1973.
- Linstone, H.A. & Turoff, M. The Delphi method: Techniques and applications. Reading, MA: Addison-Wesley, 1975.
- Rohrbaugh, J. Making decisions about staffing standards: An analytical approach to human resource planning in health administration. In L.G. Nigro (Ed.), Decision Making for Public Administrators. New York, Dekker, 1982.
- Rohrbaugh, J. Improving the quality of group judgment: Social Judgment Analysis and the Nominal Group Technique. Organizational Behavior and Human Performance, 1981, 28.
- Rohrbaugh, J. Improving the quality of group judgment: Social Judgment Analysis and the Delphi technique. Organizational Behavior and Human Performance, 1979, 24, 73-92.
- Shaw, M.E. Group dynamics: The psychology of small group behavior. New York: McGraw-Hill, 1976.
- Van de Ven, A., & Delbecq, A.L. Nominal versus interacting group processes for committee decision-making effectiveness. Academy of Management Journal, 1971, 9, 203-212.